Innovation Capability of Agro-Based Start-ups and its Effect on Organizational Performance

Synopsis

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SECTION 1

INTRODUCTION

Innovativeness is measured as a vital component of growth methods used to enter new market by firms, extend existing market share, and maintain high profitability. Not only does innovation lead to profitability, but it also leads to more efficient manufacturing practises, higher market performance, and a desire to maintain a positive reputation in the eyes of customers. Innovations provide organisations with a structured path to overcome difficulties while pursuing a sustained competitive advantage (Gunday, Ulusoy, Kilic, & Alpkan, 2011).

Start-ups play an essential role in societal upliftment through innovation and creative concepts. Agri start-ups in India provide solutions to farmers' difficulties by combining fresh ideas with technology. Countries like the USA, China, UK are tying the knot with technology, bringing out the revolution in agriculture and bridging the gap between the final product and their end users. Start-ups in agriculture are a solution to many parts of the agricultural value chain which are in different forms like products applications and services.

One of the global topics of discussion is the Indian Start-up system, especially agriculture. Hundreds of bright young people choose to pursue entrepreneurship rather than joining the traditional scope of multinationals and the government sector. These start-ups are providing answers to mass-level problems. India saw a decline in the year 2017 with only 1,000 newly formed technology-based businesses added to the system. In 2018 with the addition of 1,200 new tech ventures, by 2022 there are over 70000 start-ups. Modern technology is being adopted in B2B firms and improved support systems are propelling the Indian Tech Start-up ecosystem forward. (Anand & Raj, 2019).

1.1 Start-ups in India

Entrepreneur forms a start-up when they want to find, build, and test a repeatable and scalable business model for their company or project.(Blank, 2010). New concepts are introduced to the market and developed into businesses that can maintain themselves economically through the start-up process. (Spender, 2014). Start-ups have an important role in promoting and supporting societal innovation. These start-ups are a challenge to the dominance of large corporations with the help of innovation while giving easier solutions to challenges. Start-ups create new jobs, which implies greater employment, they

also have an impact on the social and economic fabric of the demographic in which they work. (Anand & Raj, 2019)

Start-ups have witnessed newer attention recently in different parts of the world and also have a huge fan base in India. Their numbers are increasing, and they are now universally acknowledged as essential generators of development and employment. Start-ups can provide effective solutions through creativity and scalable technology, acting as leader for the development and transformation socio-economic sector. Start-ups are a part of a larger business environment rather than existing in a silo. (Korreck, 2019)

The government established the Start-up India programme in January 2016 to create a stronger, robust environment for cultivating start-up culture, in India which would support entrepreneurship, promote economic growth and enable large-scale job possibilities. Department for Promotion of Industry and Internal Trade (DPIIT) recognises a total of 72,993 start-ups as of 30 June 2022, with 34,473 (48 percent) of those firms based in Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Bengaluru, Pune, and Ahmedabad. (Economic Times, 2022).

The number of start-ups in India increased by a whopping 15,400 percent from 471 in 2016 to 72,993 as of 30th June 2022. According to the minister, start-ups receive an 80% discount on patent filings and a 50% discount on trademark filings when compared to other enterprises. Funding is not only available for businesses at the early, seed, and growth stages, but it has also acted as a catalyst in terms of enabling domestic capital raising, reducing pressure on foreign capital, and promoting homegrown and newer venture capital funds. (Livemint Paper, 2022).

1.2 Agro-Based Industry

Agro-based business is recognised as the Indian economy's sunrise sector due to its significant development potential and possible socioeconomic effects, particularly on employment and income generation. (Dhiman & Rani,2011). According to the Planning Commission of India Agro industries are those which are involved in the processing, manufacturing and making available agricultural products which include animal husbandry, poultry, horticulture and agricultural inputs such as farming instruments (Government of India, 1993).

There are four types of Agro Based industry:

1. Agro-produce processing units: They only refine raw resources so they can be stored and delivered

for less money. There isn't any new merchandise being produced. mills for grains, dals, and other things.

2. Agro-produce manufacturing units: Create completely new items. Finishing things are vastly different from their base materials. Sugar factories, solvent extraction units, textile mills, and so forth.
3. Agro-input manufacturing units: These are industrial units that create commodities for agricultural mechanisation or productivity increase. Agriculture implements, seed industries, pump sets, fertiliser and pesticide units, and so on are examples.
4. Agro Service: These are workshops and service centres that repair and service pump sets, diesel engines, tractors, and other farm equipment. Agro Service includes additional service activities like automation, extension activities etc. (Pasupathi & Paramasivan, 2016)

1.3 Agro-Based Start-Ups

India earns its main revenue via Agriculture, which has 118.7 million farmers, accounting for more than half of its population. The use of technology in India in reference to agriculture has been limited. As a result, India's agriculture industry contributes only 17-18% of its GDP. India has witnessed an increase in the count of agritech start-ups which are making technology more accessible and also helping these farmers in improving the standard and quality of their lives. (IBEF India, 2019).

The expanding digital content economy, as well as the accessibility and affordability of high-speed internet, are giving India's digital ecosystem a boost. As a result of the convergence of these factors, stakeholders in the agricultural ecosystem have a compelling opportunity to disrupt the status quo by utilising cutting-edge technology such as data analytics, data platforms, data digitalization, AI, ML, IoT, and software as a service (SaaS). The agricultural sector is anticipated to profit from recent government initiatives like the liberalisation of APMC markets, but India's agriculture can only reach its full potential until technology is widely adopted. (EY India, 2020)

In December 2017, the Agriculture Ministry of India, in collaboration with Start-up India, announced the AGC (Agriculture Grand Challenge), with 12 pre-defined issue statements selected for seeking solutions from companies. The competition attracted 1,066 applications from throughout the country, and 20 creative ideas were selected for scaling following five mentorship workshops with over 400

recognised Agritech businesses, multiple screenings, and interviews. (Start-up India).

There are on an average about 200 Start-up involved in the food processing and related ecosystem as stated by the government websites. These start-ups operate in the entire value chain of food processing to create new products, packaging, supply chain solutions, processing technology, storage, and transportation, as well as food safety, marketing, B2B/B2C models which are entirely based on e-commerce , distribution & retail. The Indian agritech industry may draw more than $10 billion in investments over the next ten years. (FICCI-PwC, 2021)

Agro startups are changing the way agriculture is traditionally done at every point of the value chain. Following are some instances to support the statement:

- Market connections: Farm input providers are seamlessly combining physical infrastructure and technology to provide inputs with greater cost stability..
- Farm management and precision agriculture players are supporting farmers in raising yields by up to 30%.
- Farmers can boost their income by rewarding high-quality produce thanks to quality management and traceability players..
- Supply chain technology and output market linkages players are minimising inefficiencies such as excessive farm product waste, benefiting both farmers and consumers.
- 30% of farmer families may receive loans from financial service providers, while 65% of farmer households may receive crop insurance..

Agro-based startup businesses are a viable option because of their vast scale, strong repeat ordering behavior, and high profits.

As a result of the problems posed by the COVID-19 pandemic, the sector must reassess strategies beyond 2019 to remain competitive and factor in sustainability. It is necessary to prioritize the implementation of solutions related to strategies for increasing the startup performance on food tech platforms while keeping several critical growth drivers in mind.

There are 8 segments of Food Processing Start-Ups

Food Product	Packaging	Food Processing Technologies	Supply Chain Solutions
Food Processing equipments	Storage & Logistics	Food safety	Distribution

Figure 1: Segmentation of Food Processing Start-ups (Source: Start-up India Report)

Similarly, for agritech, there is a similar classification which helps us to understand the various areas in which these agro start-ups operate and are solving problems of the stakeholders.

Upstream (Input) Marketplace model (matching Agri Input sellers to farmers	Downstream (output) Farm to Fork supply Chain model matching farmers to business or retail customers	Farming-as a-service
IoT/ Big Data led Innovation	Engineering led Innovation	Miscellaneous (Innovation in Agri products, dairy farming)

Figure 2: Segmentation of Agri-tech Start-ups (Source: Ministry of Agriculture and farmers welfare Background report 2016)

According to the Startup India website, the composition of the different agro startups are such that there is a vast availability of Agri-tech start as compared to the other sectors.

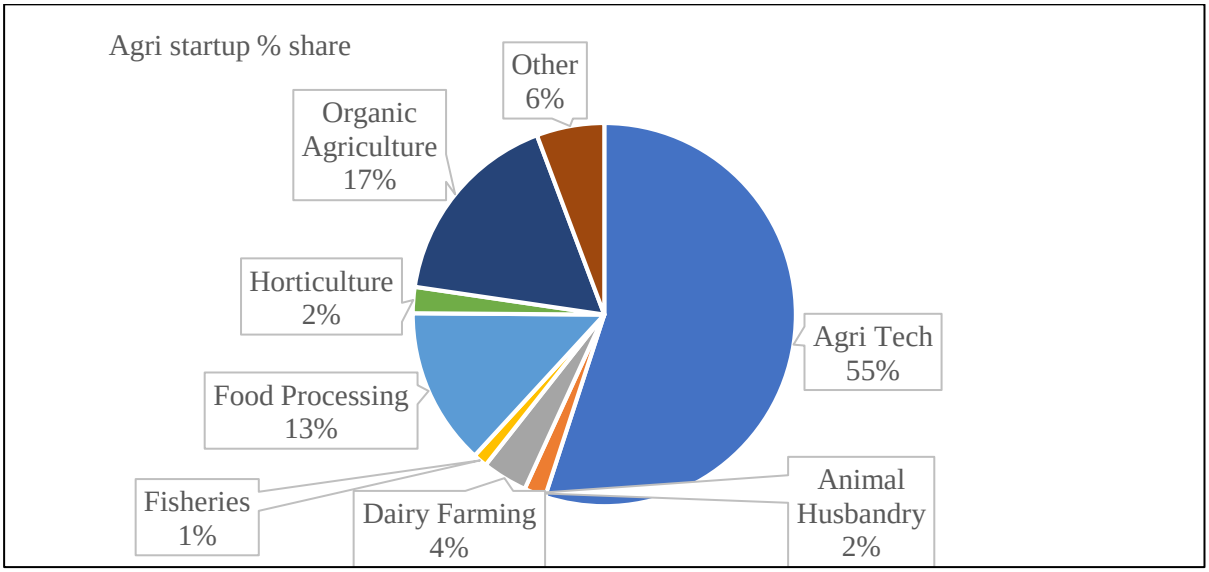

Figure 3: Composition of Agro Based Start-ups in India (Source: Startupindia.gov.in)

1.4 Innovation Capability

Authors define “Innovation capability as the ability of the firm to transform knowledge repeatedly and ideas into either new products, processes or systems so as the firm and its stakeholders are benefited to the maximum” (Lawsons & Samson, 2001). In order to gain business value and competitive advantage businesses need to enhance their performance which can be achieved through innovation. (Damanpour, 1991).

Due to the gap between organisation’s wants and what to achieve and what it can do results in failure or difficulty in maintaining the innovation projects in a successful manner (Pisano, 2015).

There is a difference in the sources and capabilities required to succeed in innovation activities in different companies. Some firms outperform others in reproducing innovation success, and this ability can be framed as an innovation capability. (Aas, T. H., and K. J. Breunig, 2017).

From the standpoint of resource-based or dynamic capabilities, innovation capability has been stressed in business administration as one of the essential competencies required for organisations to gain competitive advantages.

A company's innovation capabilities is the knowledge that influences its strategy or decision-making in a beneficial way. It relates to the potential of a company to acquire, absorb, transform, and apply knowledge, or to a learning capability, which is the extent to which organisational members actively embrace new advancements.

Various types of abilities that make up the whole innovation capability are described in some research. (Oura et al., 2016). Some examples are entrepreneurial capabilities, marketing capabilities, learning capabilities, networking capabilities, and resource exploitation capabilities.

1.4.1 Innovation Orientation

Strategic orientation related to innovation is referred to as innovation orientation, which is a part of the broader theme of innovation. An organization's overall dominating strategy, which reflects its strategic focus, competitive posture is characterised by orientation. (Human and Naude, 2010).

An inner skills technique to strategy, which contends that a firm's

strategic path is decided through its inner skills, such as sources and expertise base, need to be used to assess innovation orientation. This approach is linked to an internal behaviour lens that must be used

to evaluate innovation orientation. (Dobni, 2010).

This perspective on innovation orientation is significant because it

- helps in advocating the holistic perspective
- helps in fostering theory development by stating the difference in the innovation-orientation system and its potential organisational skill and results such as innovation and firm performance
- helps in providing a wide, formalised image of innovation orientation
- helps in finding the starting point for future research. (Siguaw, Simpson, & Enz, 2006)

1.4.2 Market Orientation

"Market orientation is a series of activities that shows an organization's level of acceptance of the philosophy related to marketing concepts" (Kohli & Jaworski,1990). Kohli & Jaworski,1990 classified these activities into three categories:

- organization-wide collection of market information
- dissemination of the information among functions
- organisational responsiveness to such information.

To meet customer satisfaction and expectations and for producing superior products and services these actions are thought to be necessary.Others, on the other hand, contend that market orientation promotes effective innovation and higher organisational performance (Deshpande et al., 1993; Kohli & Jaworski, 1990). However, no evidence of a substantial association between market orientation and product innovation planning activities has been identified in empirical studies (Lawton and Parasuraman, 1980).

1.4.3 Absorptive Capacity

"Absorptive capacity is a firm's ability to identify, assimilate, transform, and apply valuable external knowledge to the current one" (Roberts, Galluch, Dinger, & Grover, 2012). Research on absorptive capacity outcomes currently lacks integrative investigations of both innovation and financial success metrics, and existing work falls short of investigating the interrelationships between them.

Most studies regard ACAP as producing only innovation, which "stands in stark contrast to (Cohen & Levinthal, 1989). Internal R&D teams boost a company's absorptive capability. A company's investment in R&D has a direct impact on its absorptive capacity. Absorptive capacity is seen as a

motivation for firms to invest in R&D (e.g. patents). The more a company invests in research and development, the better it will be able to recognise the value of fresh external information.

According to Zahra and George (2002), Absorptive Capacity has two general subsets or dimensions:

• Potential absorptive capacity (PACAP): This includes knowledge acquisition and assimilation processes, giving businesses considerable planned flexibility and linkage to adapt and advance in a constantly and rapidly changing environment.

• Realized absorptive capacity (RACAP): This comprises understanding change and utilization, along with the achievement of new insights and outcomes through the integration of current and recently acquired knowledge into corporate working.

SECTION 2

REVIEW OF LITERATURE

2.1 Literature Map

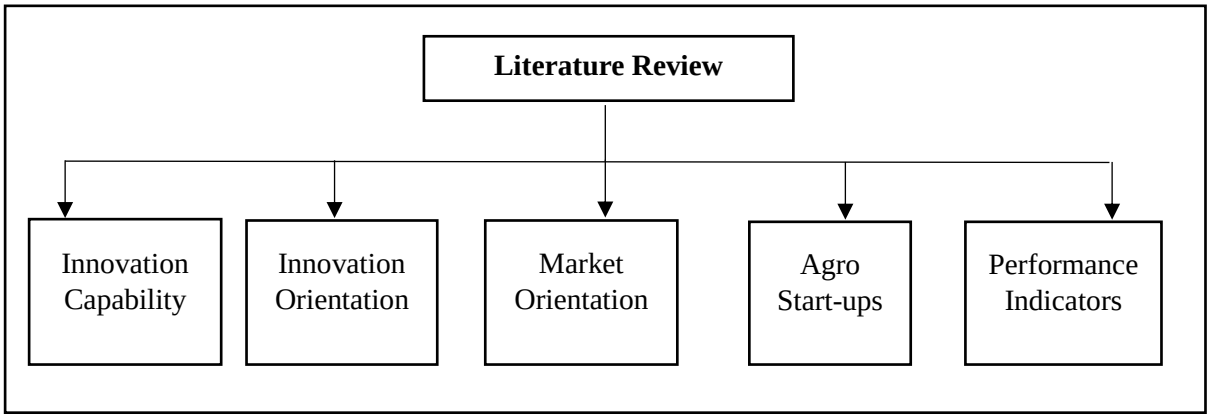

Figure 4: Literature Map (Source: Research Construct)

2.2 Conceptual coverage of Literature

The study is adapted from the Developing Innovation Capability in Organization (Lawson & Samson, 2001) and (Huhtala & Sihvonen, 2014). The theory of Innovation Capability is well supported by empirical evidence. Words like innovation, innovation ability, innovation capacity, and IC have been used interchangeably in the literature on innovation. According to various scholars, innovation theory has hampered the advancement of this interchangeability (Downs and Mohr, 1976). Damanpour (1991), on the other hand, believes that the influence of this divergence is minimal. According to Lawson and Samson (2001), They suggested that organisational competence to innovate arises from skills and

abilities that enable the best use of available resources. Previous research has established a link between innovation capability and company performance.(Wu, Mahajan, & Balasubramanian, 2003).Innovation networks are a different area of network management research that emphasises cooperation among various actors for invention. By focusing on interactions roles in developing innovation related processes and products, researchers explore how external participants in organisations (such as suppliers, consumers, competitors, and research institutions) affect the innovation capabilities or performance of new product of a firm. According to the industrial network concept, businesses are entangled in a complicated web of connected interactions that allows them to access the resources necessary for long-term commercial viability (or, in our instance, effectively producing new products). According to this perspective, businesses build networking skills on purpose to control the relational and network properties in which they are engaged and to increase their ability to innovate to utilise their competitive advantage. (Freytag & Young, 2014).

Table 1: Summary Table of Literature Review

Summary of Literature Review														
				Construct			**Area of Study**			**Methodology**			**Context**	
S.no	**Title**	**Author (Year)**	**Category**	**Innovation Orientation**	**Innovation Capability**	**Market Orientation**	**Entrepreneurial**	**Business Performance**	**Agro based Start-up/industry**	**Descriptive**	**Empirical**	**Exploratory**	**Indian**	**International**
1	"Developing innovation capability in organizations: a dynamic capabilities approach"	Lawson, B. and Samson, D. (2001)	Paper		✓			✓		✓				✓
2	"SME Innovative Capacity, Competitive Advantage and Performance in a 'Traditional' Industrial Region of Portugal"	Carla Susana Marques, João Ferreira (2009)	Paper	✓		✓		✓		✓				✓
Continued														

3	"The effect of market orientation and its components on innovation consequences: a meta-analysis"	Amir Grinstein (2008)	Paper	✓		✓	✓				✓			✓
4	"The Impact of Absorptive Capacity on Innovation: The Mediating Role of Organizational Learning"	Rafael Sancho-Zamora, Felipe Hernández-Perlines, Isidro Peña-García and Santiago Gutiérrez (2021)	Paper	✓				✓			✓			✓
5	"Reorganising global value chains and building innovation capabilities in Brazil and India"	Rasmus Lemaa, Ruy Quadros, Hubert Schmitz	Article		✓			✓				✓	✓	
6	"Market orientation, innovation capability and business performance Insights from the global financial crisis"	Juho-Petteri Huhtala, Antti Sihvonen (2013)	Paper		✓	✓		✓		✓				✓
7	"Innovation capabilities and performance: are they truly linked in SMEs"	Gonzalo Maldonado-Guzmán, Jose Arturo Garza-Reyes (2017)	Paper		✓			✓			✓			✓
8	"Relationships between Innovation Capabilities, Business Performance, Marketing Performance and Financial Performance: A Literature Review"	Vijayesvaran Arumugam, Noor Gani Mohd Nor (2013)	Article		✓			✓				✓		✓

Continued

9	"Balanced scorecard metrics and specific supply chain roles"	Antônio André Cunha Callado, Lisa Jack (2014)	Paper	✓				✓		✓				✓
10	"Market Orientation: The Construct, Research Propositions, and Managerial Implication"	Ajay K. Kohli & Bernard J. Jaworski (1990)	Paper			✓				✓				✓
11	"The Effect of a Market Orientation on Business Profitability"	John C. Narver & Stanley F. Slater (1990)	Paper			✓		✓			✓			✓
12	"Innovation capability in SMEs: A systematic review of the literature"	Minna Saunila (2019)	Article	✓		✓					✓			✓
13	"Business process performance measurement: a structured literature review of indicators, measures and metrics"	Amy Van Looy and Aygun Shafagatova (2016)	Paper	✓				✓		✓				✓
14	"Measuring innovation capability in exporting firms: the INNOVSCALE"	Margarida Vicente and José Luís Abrantes (2014)	Paper		✓			✓		✓				✓
15	"The relationship between innovation capability and performance of the firm"	Saunila, M., Pekkola, S., & Ukko, J. (2014).	Paper		✓			✓			✓			✓
16	"Innovation Capability and Firm Performance Relationship: a Study of Pls-Structural Equation Modelling (Pls-Sem)"	Naala, M., Nordin, N., & Omar, W. A. B. W. (2017)	Paper		✓			✓		✓				✓
Continued														

17	"Measuring the innovation capability of micro enterprises in India Construct development and validation"	Juhi Raghuvanshi, Rajat Agrawal, Prakriti Kumar Ghosh, (2019)	Paper	✓	✓			✓		✓			✓	
18	"Linking Entrepreneurial Orientation to Firm Performance: The Role of Differentiation Strategy and Innovation Performance"	Cemal Zehir, Esin Can, Tugba Karaboga. (2015)	Paper	✓			✓	✓			✓			✓
19	"Relationships between innovation capabilities, business performance, marketing performance and financial performance"	Alam, S. S., Arumugam, V., Nor, N. G. M., Kaliappan, P., & Fang, L. S. (2013)	Paper		✓			✓				✓		✓
20	"Entrepreneurial orientation and business performance of women-owned small and medium enterprises in Malaysia"	Mahmood, R., & Hanafi, N. (2013)	Paper				✓	✓			✓			✓
21	"The effect of a market orientation on business profitability"	Narver, J. C., & Slater, S. F. (1990)	Paper			✓		✓			✓			✓
22	"The impact of supply chain relationships and integration on innovative capabilities and manufacturing performance: the perspective of rapidly developing countries"	Adelanto, D., Teh, P. L., & Ahmed, P. K. (2018)	Paper		✓			✓			✓		✓	
Continued														

23	"The Impact of Innovativeness on Supply Chain Performance: Is Supply Chain Integration a Missing Link? Supply Chain Management"	Seo, Y., J. Dinwoodie, and D. Kwak. (2014)	Paper	✓				✓			✓			✓
24	"Innovative capability, innovation strategy and market orientation: an empirical analysis in Turkish software industry"	Akman, G. and Yilmaz, C. (2008)	Article	✓	✓	✓		✓			✓			✓
25	"Organisational innovation in SMEs: The importance of strategic orientation and competitive structure"	H. Salavou, G. Baltas and S. Lioukas (2001)	Paper	✓		✓	✓	✓			✓			✓
26	"Customer and supplier involvement in design: the moderating role of incremental and radical innovation capability"	Menguc, B., Auh, S. and Yannopoulos, P. (2014)	Paper		✓			✓			✓			✓
27	"Performance measurement approach for innovation capability in SMEs"	Saunila, M. (2016)	Paper		✓			✓		✓				✓
28	"A Scale Development for Innovation Capability Measurement"	Calik, E., Calisir, F., & Cetinguc, B. (2017)	Paper		✓			✓			✓			✓
29	"Relationship between innovation capability, innovation type, and firm performance"	Rajapathirana, R. J., & Hui, Y. (2018)	Paper		✓			✓			✓			✓
Continued														

30	"Market orientation, learning orientation, and innovation capabilities in SMEs: An extended model"	Keskin, H. (2006)	Paper		✓			✓			✓			✓
31	"The dynamic impact of innovative capability and inter-firm network on firm valuation: A longitudinal study of biotechnology start-ups"	Zheng, Y., Liu, J., & George, G. (2010)	Paper		✓				✓	✓				✓
32	"How collaborative innovation networks affect new product performance: Product innovation capability, process innovation capability, and absorptive Capacity"	Najafi-Tavani, S., Najafi-Tavani, Z., Naudé, P., Oghazi, P., & Zeynaloo, E. (2018)	Paper	✓				✓			✓			✓
33	"Innovation capabilities and performance: are they truly linked in SMEs?"	Maldonado-Guzmán, G., Garza-Reyes, J. A., Pinzón-Castro, S. Y., & Kumar, V. (2018)	Paper		✓			✓				✓		✓
34	"Knowledge sharing, absorptive capacity, and innovation capability: an empirical study of Taiwan's knowledge intensive industries"	Liao, S. H., Fei, W. C., & Chen, C. C. (2007)	Paper		✓			✓			✓			✓
35	"Classification and categorization of Brazilian agricultural startups (Agtechs)"	Ramos, P. H. B., & Pedroso, M. C. (2021)	Paper	✓			✓		✓		✓			✓

36	"Conceptualizing Innovation Orientation: A Framework for Study and Integration of Innovation Research"	Siguaw, J. A., Simpson, P. M., & Enz, C. A. (2006)	Paper	✓				✓			✓			✓
37	"The effect of innovation practices on agribusiness performance: A structural equation modelling (SEM) approach"	Ntiamoah, E. B., Li, D., & Sarpong, D. B. (2019)	Paper	✓				✓		✓				✓
38	"Innovation and business performance: small firms in the UK"	Hughes, A. (2001)	Paper	✓				✓			✓			✓
39	"Antecedents and consequences of firms' process innovation capability: a literature review and a conceptual framework."	Frishammar, J., Kurkkio, M., Abrahamsson, L., & Lichtenthaler, U. (2012)	Paper		✓			✓				✓		✓
40	"The role of business analytics capabilities in bolstering firms' agility and Performance"	Ashrafi, A., Ravasan, A. Z., Trkman, P., & Afshari, S. (2019)	Paper		✓			✓			✓			✓
41	"Innovation capability in SMEs: A systematic review of the literature"	Saunila, M. (2020)	Article		✓			✓				✓		✓
42	"Innovative capacity and the performance of businesses incubated in university incubator units"	Rakthai, T., Aujirapongpan, S., & Suanpong, K. (2019)	Article		✓		✓	✓				✓		✓
43	"Towards a framework for innovation orientation within business"	Norris, D., & Ciesielska, M. (2019)	Paper	✓				✓				✓		✓

44	"Managing market intelligence: The comparative role of absorptive capacity and market orientation"	Rakthin, S., Calantone, R. J., & Wang, J. F. (2016)	Article			✓		✓				✓		✓
45	"Innovative capability and export performance of Chinese firms"	Guan, J., & Ma, N. (2003)	Paper		✓			✓			✓			✓

2.3 Research Gap

In India, innovation capability related to agro start-ups is a recent development and an unexplored concept. The previous literature talks about the concept in the foreign country and shows the conection between the innovation capability and its effect of it on the firm's performance. Many researchers have studied the factors which influence innovation capabilities like market orientation, absorptive capacity and entrepreneurial orientation. (Lawson, B. and Samson, D. (2001), Carla Susana Marques, João Ferreira (2009), Amir Grinstein (2008), Juho-Petteri Huhtala, Antti Sihvonen (2013). There are very few studies which shed a light on the impact of innovation capability on start-ups and on agro-based to be specific (Adams, R., Alexander, A., & Öberg, C. 2014), (Ramos, P. H. B., & Pedroso, M. C. 2021), (Zheng, Y., Liu, J., & George, G. 2010). After doing a thorough review of the existing literature innovation capability is an important concept in terms of firm's performance (Zheng, Y., Liu, J., & George, G. 2010), (Saunila, M., Pekkola, S., & Ukko, J. 2014), (Naala, M., Nordin, N., & Omar, W. A. B. W. 2017). On the basis of secondary data the concept of start-ups is not new in our country but is growing very fast, with new policies to support the start-up culture in India studying the concept of innovation capability in agro start-ups will be of interest an great use.

SECTION 3

NEED OF STUDY

As also stated earlier agriculture is the primary source of income for more than half of India's population. The agricultural industry accounts for 20% of the national GDP. By 2025, the Agro start-up industry in India has the potential to generate revenues of roughly $24 billion. This could be one of the primary reasons for a significant increase in the Indian economy. (Mckinsey & Co). The Agro Start-ups industry developing, and refining market linkages is one of the main market opportunity in reference to the Indian

market. These developments benefit the farmers by taking farm products directly to consumers, improving accessibility to real-time information, digitizing agriculture, and providing better-quality implements to the farmers. Agritech startups are solving the farmers' problems and the supply chain.

The Indian food and grocery market rank 6th globally, 70% of total sales is related to the retailing account. One of the country's largest industry accounting for 32% of the total food market, and ranks 5th in terms of output, consumption, export, and expected growth is the Indian food processing industry is. It contributes 13% of India's exports and 6% of total industrial investment and around 8.80 and 8.39% of the GVA in Manufacturing and Agriculture. It promotes customer transparency throughout the value chain by offering innovative products, a more efficient supply network, and more efficient processing plants. Despite this, many Agro Startups fail because they are unable to satisfy commercial objectives. Hence, Startups need to realize their innovative capabilities to have a competitive advantage in the market. There is great potential to accelerate industrial growth and contribute to the nation's inclusive progress. There are very few pieces of evidence that explore the innovation capability of Agro-based Startups in India. According to Start-up India there are about 70000+ START-UPS (as of 24th July 2022) providing 4.7 Lac jobs. (Start-up India)

According to an Orios Venture Partners study, Indian start-ups raised $42 billion in 2021, up from $11.5 billion the previous year. Share Chat, Cred, Meesho, Nazara, Moglix, MPL, Grofers (now Blinkit), upGrad, Mamaearth, GlobalBees, Packo, Spinny, and others are among some of the unicorns in the country. With 90 unicorns, India ranks third behind the United States (487) and China (301). (Economic Times,2022)

It is something to know that there are no agro-based start-ups which are at the stage of being a Unicorn. This is a sign that ago-based start-ups are not able to convert from the ideation stage to scaling or maturity. This one on the main reason that there are no agro unicorns. The firm needs to realise the innovation capability of their firm and grow at a rapid scale and become the largest contributing sector in the India Economy. The service sector has the maximum number of unicorns, which contributes over 50% to India's GDP. (Livemint,2022). With such a high percentage of startups in India agro-based startups only contribute less than 5% of it.

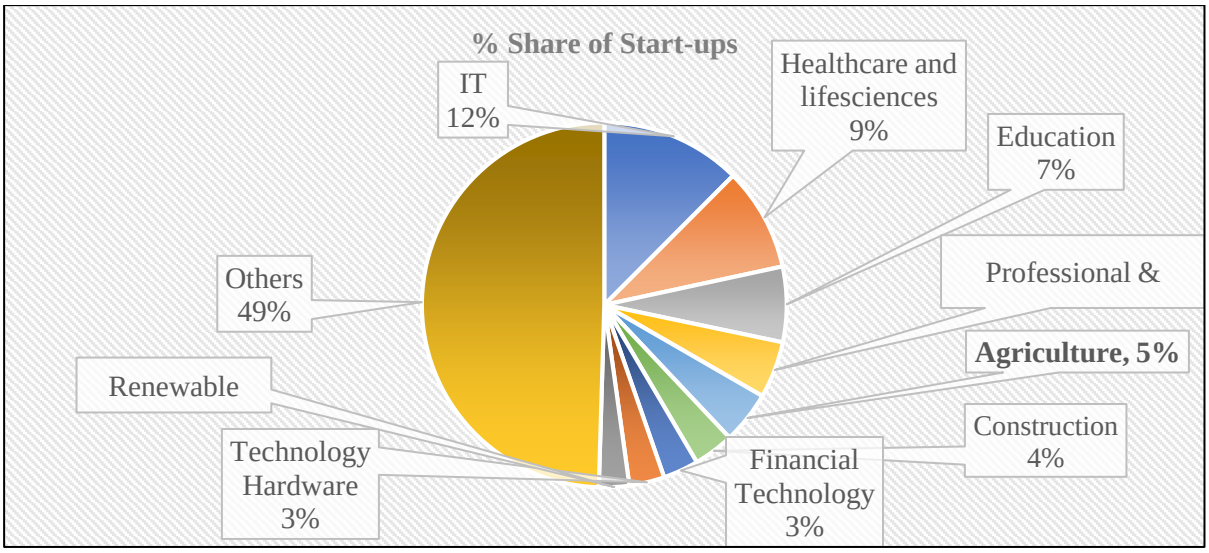

Figure 5: Share of Start-up in India (Source: Start-up India Website)

Digital agriculture, greater access to inputs, financing and market linkage are all emerging topics of focus. These technological advancements enable various agro start-ups to develop farming-related advanced technological mechanisms to help local farming become a viable and sustainable sector. There are some state governments which have special policies for these start-ups to exist and flourishing the states. There is very little research that investigates the innovation capabilities of Agro-based Start-ups in India. As a result, we may infer that the sector is critical, and research on the innovation capacity of agro-based start-ups is essential.

SECTION 4

CONCEPTUAL FRAMEWORK

A literature review was used to develop the conceptual framework, which is based on five key variables/drivers: market orientation, absorption capacity, entrepreneurial orientation, barriers to entry, partnership and cooperation. The Antecedent, Behaviour, and Consequence framework, popularly known as "ABC," was used to create the conceptual framework. Skinner's 2020 work helps in finding the work of ABC which is a part of applied behaviour analysis. Where market orientation, absorption capacity, entrepreneurial orientation, entry barriers, and partnership and cooperation are antecedents. In addition, the firm's age, product category, and administrative intensity serve as control variables. The outcomes are discovered to be organisational performance variables.

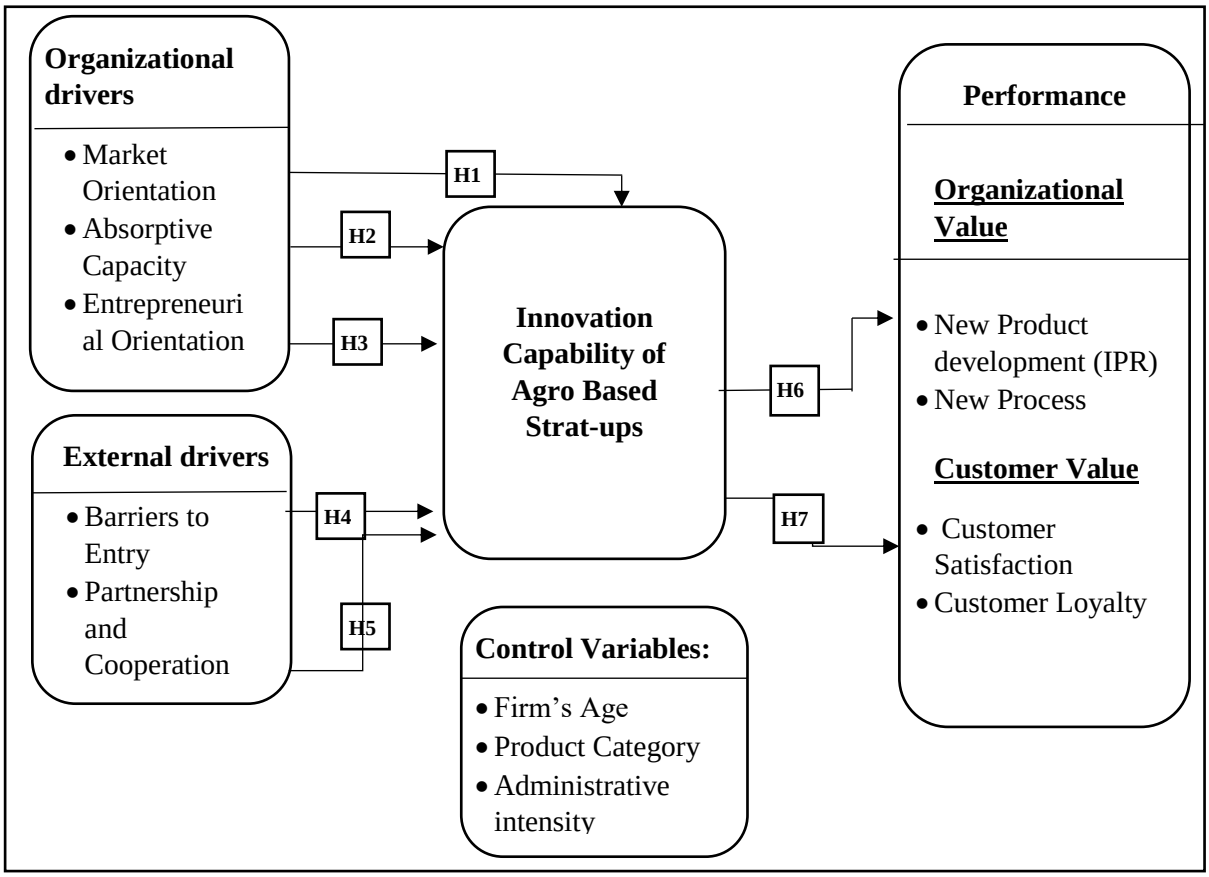

Figure 6: Conceptual Framework (Source: Researcher's Construct)

Table 2: Construct

S.no	Construct	Definition	Reference
1	Innovation Capability	"The ability to continuously transform knowledge and ideas into new products, processes, and systems for the benefit of the firm and its stakeholders"	Huhtala, Sihvonen (2014) Lawson and Samson, 2001
2	Market Orientation	"The organization-wide generation of market intelligence, dissemination of the intelligence across departments and organization-wide responsiveness to it"	Huhtala, Sihvonen (2014) Kohli and Jaworski (1990)
3	Absorptive Capacity	"Absorptive capacity is a firm 's ability to identify, assimilate, transform, and apply valuable external knowledge"	Roberts, N., Galluch, P. S., Dinger, M., & Grover, V. (2012)
4	Entrepreneurial Orientation	"Entrepreneurial orientation (EO) is a firm-level strategic orientation which captures an organization's strategy-making practices, managerial philosophies, and firm behaviors that are entrepreneurial in nature"	Anderson, B. S., Covin, J. G., & Slevin, D. P. (2009).

5	Barriers to Entry	"A barrier to entry is anything that prevents an entrepreneur from instantaneously creating a new firm in a market. A long-run barrier to entry is a cost necessarily incurred by a new entrant that incumbents do not (or have not had to) bear"	Dennis Carlton and Jeffrey Perloff (1994)
6	Customer Value	"Customer value is the perception of what a product or service is worth to a customer versus the possible alternatives."	Huhtala, Sihvonen (2014) Woodside, Golfetto (2008)
7	Organizational Value	"Organizational values can be defined as beliefs about socially or personally desirable end states or actions that are explicitly or implicitly shared by members of an organization"	Huhtala, Sihvonen (2014) Schwartz (1992)

SECTION 5

OBJECTIVES & HYPOTHESES

5.1 Objectives

Here are the proposed objectives that have been derived from studying the literature review:

Objective 1: To explore the prevailing scenario of Innovation Capability of Agro-Based Start-ups in India.

Objective 2: To analyse the drivers of innovation capability in Agro-Based Start-ups

Objective 3: To analyse the effect of innovation capability on the performance of Agro-Based Start-ups

Objective 4: To recommend a strategic framework based on results obtained.

5.2 Hypotheses

With the help of the conceptual framework model, the hypothesis that Market Orientation, Absorptive Capacity, Entrepreneurial Orientation, Barriers to Entry, Partnership and cooperation are antecedents to the formation of organizational performance both in the organizational value and customer value is their consequence. Taking these as base a study will be carried out to understand the link and test these hypotheses

5.2.1 Market Orientation and Innovation Capability

With the help of review of the literature demonstrated that the connection between market orientation and corporate performance is controlled by innovation skills, which translate a organizational culture oriented to market into activities and hence consequences. A crucial element in this situation has been recognised as innovation capability. (Han et al., 1998).

According to this reasoning, a firm is equipped to pivot its innovation potential on satisfying unmet

customer demands if it has an organisational culture that is market-oriented and an understanding of both what customers want and what the competition is offering.

This makes it easier to generate more value for consumers, which enhances company performance. Organizations lacking this capability may therefore be unable to fully leverage the market knowledge produced by a Market Orientation culture. (Slater and Narver, 1990). Therefore, the following hypothesis has been developed:

H1: Market orientation positively influences the Innovation Capability of Agro-based start-ups

5.2.2 Absorptive Capacity and Innovation Capability

The authors contend that an organization's utilisation of external understanding is a critical determinant of its ability to innovate. Because both abilities operate together to strengthen an organization's competitive edge, earlier study on absorptive capacity found a significant positive association between absorptive capacity and creativity.

Zahra and George (2002) stated the ability of a corporation to create and use knowledge through higher order investments explains disparities in competitive advantage among organisations (Flatten, Greve, & Brettel, 2011).

Businesses with a habit of assimilating and using strategic market information and knowledge continuously develop a propensity to capitalise on changing business environments by strengthening their capacity for innovation to create and sell novel products that satisfy customers' needs and outperform rivals in the markets. (Kostopoulos, Papalexandris, Papachroni, & G.Ioannou, 2011). Due to these evidences the following hypothesis is formed:

H2: Absorptive Capacity positively influences Innovation Capability of Agro-based start-ups

5.2.3 Entrepreneurial Orientation and Innovation Capability

"An entrepreneurial firm is one that engages in product-market innovation, pursues somewhat hazardous projects, and is first to come up with 'proactive' inventions, beating competitors to the punch," according to the original definition Anderson, (B. S., Covin, J. G., & Slevin, D. P, 2009). They proposed three categories to define and assess entrepreneurship: 'innovativeness', 'proactivity' and 'risk-taking'. Firms with an entrepreneurial orientation may identify and capitalise on untapped market opportunities, adapt to problems, and are willing to take chances in uncertain circumstances which is the absolute ability of

the firm to innovate (Wiklund & Shepherd 2005).

Meanwhile, innovative competence is defined as the ability to obtain, develop, and utilise innovative technologies for designing and manufacturing (Xu, Lin, & Lin 2008). Therefore, with this evidence hypothesis is established is:

H3: Entrepreneurial Orientation positively influences Innovation Capability of Agro-based start-ups

5.2.4 Barriers to Entry and Innovation Capability

A barrier to entry might be exogenous or endogenous (Shepherd, 1979). When a market entrant's product/market scope was broad, the effects of barriers were less severe. Based on the findings, it is stated that market entrants' product/market breadth generally moderates the relationship between entry barriers and performance, with innovation capabilities acting as a moderator (Robinson & McDougall,2001). With this evidence the following hypothesis is formed:

H4: Barrier to entry positively influences Innovation Capability of Agro-based start-ups

5.2.5 Partnership & cooperation and Innovation Capability

Several prior researches identified the establishment of relations among a firm and other firms and/or organisations, as well as of the firm's external openness, as measured by the volume of imports and exports, as drivers of its innovation Capability. Mogollón and Vaquero, 2004; Silva, 2003). Firms that make alliances and interact with other companies and/or organisations are more innovative. (Kaufman et al., 2000). Hence the following hypothesis is established:

H5: Supporting Organization positively influences Innovation Capability of Agro-based start-ups

5.2.6 Innovation Capability and Organizational value

The ability to innovate has been identified as a vital factor in achieving a competitive advantage and long-term success (Liao et al., 2017; Phong and Lei, 2017). It has also been claimed that the ability to innovate is a multidimensional construct. Businesses across a variety of industries must simultaneously increase the productivity and inventiveness of their operations to produce new products and new processes. This endeavour becomes more difficult due to the growing origin of new concept occasion and the resources needed to bring newer idea to market.

The ability of an organisation to innovate is greatly influenced by its access to information about

customers and competitors, its understanding of internal organisational and technological capabilities, and its awareness of the demands that governmental policies, environmental laws, and socioeconomic trends place on it from the outside. (Swink, 2006). Hence the following hypothesis is formed:

H6a: Innovation Capability positively effects New Product development in Agro-based start-ups

H6b: Innovation Capability positively effects New Process development in Agro-based start-ups

5.2.7 Innovation Capability and Customer Value

Customer satisfaction is impacted by innovation capability on a large scale and is of great benefit. To suit the need of customer share organizations with innovation capability develop something new which proves the link between two. "Customer loyalty is defined as number of repeat purchases from the same supplier over a given period of time" (Simon and Yaya,2012).

According to previous research, customer loyalty is a fervent attachment on the part of the consumer to a good, brand, marketer, service, or company that surpasses that of rivals in the market, leading to repeat purchases and a devoted supporter of the business. (Yang, Marlow, & Lu, 2009) Hence the following hypothesis is formed:

H7a: Innovation Capability positively effects Customer satisfaction of Agro-based start-ups

H7b: Innovation Capability positively effects Customer Loyalty of Agro-based start-ups

SECTION 6

Research Methodology

6.1 Research Design

Descriptive research is proposed for the research strategy was chosen with the goal of creating an accurate depiction of people, events, or circumstances (Saunders, 2019), and it is based on surveys, interviews, and online questionnaires.

6.2 Scope of the Study

The proposed research will comprise the agro start-ups in India. According to the DPIIT, the largest cluster of agro start-ups are Delhi, Uttar Pradesh, Bangalore and Mumbai. The study's aim is to determine the different antecedents of innovation capability for the improved performance of agro start-ups these clusters are taken into consideration and they are in different geographical locations they may or may not be under the same type of conditions.

6.3 Sample Design

For this research, non-probabilistic sample, comprising of agro start-ups as respondents. The purposive sampling technique will be used to identify the potential agro startups from the Government of India website www.startup.gov.in.

Startups registered under DPIIT (Department for Promotion of Industry and Internal Trade) are considered.

6.4 Sample Size

As there is an availability of registered firms on the government website hence the population is Finite. Hence the approach here is to find out an approachable sample size Solvin's Formula is taken into consideration.

$n = N / (1 + N e^2)$

n = Number of samples

N = Total population

e = margin of error

Due to the uncertainty in industrial research, a 10% margin of error is taken into consideration

Total Population of Agro Start-ups according to DPIIT 530 and above (as on 24th July 2022)

Keeping a 10% margin of error

$n = 530 / (1 + 530*(0.1)^2)$

$= 530/ (1 + 5.3)$

$= 530/6.3$

$= 84.12$

85 firms will be taken as sample units.

From the 85 identified units average 5 respondents from each unit will be taken into consideration.

- Entrepreneur: 1
- Business Development Team: 2
- Other Employees: 2

85 *5= 425 respondents

6.5 Source of Data Collection

- **Primary Data:** Surveys, sampling, questionnaires, testing, and analytical difficulties are used in primary research to better understand the success of the Agro-based start-up.
- **Secondary Data:** Secondary data will help in providing information and facts that are related to the study, given the changing behaviour of the research. So, secondary data will be collected via these given sources:

  - Journals
  - Research Reports
  - Start-Up India
  - DPIIT (Department for Promotion of Industry and Internal Trade)
  - IBEF (India Brand Equity Foundation
  - McKinsey& Company
  - EY (Ernest & Young) Report
  - Magazines
  - Books.

6.6 Statistical tool to be used:

To test the data and hypothesis structural equation modelling (PLS- SEM) will be used. According to Bollen, SEM is a statistical framework for numerous regression analyses, factor analyses, path analyses, ANOVA, and canonical correlation analyses (1989), as it has the capacity to capture ignored idea and build that are absent from earlier literature, structural equation modelling was chosen for this investigation.

Due to the many variables in the framework, Structural Equation Modelling is a favourable way for visually display the compound interactions between variables. The data would also be analysed using additional pertinent inferential statistical tools, like descriptive statistics as and when required.

SECTION 7

PROPOSED CHAPTERIZATION

The Proposed Research will comprise following chapters:

- Chapter 1: Introduction
- Chapter 2: Review of Literature

- Chapter 3: Research Design and Methodology
- Chapter 4: Data Collection and Analysis
- Chapter 5: Result and Interpretation
- Chapter 6: Conclusion
- Chapter 7: Direction for Future Research and Limitations
- Bibliography and References
- Appendix

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